

ing the application of thermodynamics to electro-chemistry, and the "Nernst Theorem." In part ii. the author discusses photo-chemistry, the theory of radiation, and the application of the theory of Quanta to the problems of photo-chemistry, radiation, and the kinetic theory of matter. These highly important aspects of what one might term the "newer physical chemistry" are dealt with in a very simple and clear fashion, and this part of the book will be exceedingly valuable to students of chemistry.

During the last decade the scope and importance of physical chemistry have become enormously increased. To write within moderate compass a good text-book on the subject has become a task of rapidly increasing difficulty. Nevertheless Prof. Lewis has achieved this task with an admirable success. One might say of him, "Jeunesse savait, jeunesse pouvait."

F. G. DONNAN.

THE FLORA OF ALL AFRICA.

The Flowering Plants of Africa: An Analytical Key to the Genera of African Phanerogams. By F. Thonner. Pp. xvi+647. (London: Dulau and Co., Ltd., 1915.) Price 15s. net.

THE work under notice is a translation of the author's "Die Blütenpflanzen Afrikas," which appeared in 1908. The preface is dated Vienna, Austria, 1913, and the work was issued by the Burleigh Press, Bristol, in 1915. Dr. A. B. Rendle revised the translation, which includes "diagnostic characters of the genera, the approximate number of African species described up to the end of the year 1910; their geographical distribution, their uses, and their more important synonyms." So far as tested, it is up to the date named; but six years' additions are very considerable, Kew alone having published at least 300 new species, leaving new genera out of the question. But comprehensive compilations necessitate supplements if they are brought as nearly as possible up to date of publication; and Thonner gives six pages of corrections and additional genera, chiefly from the years 1911 and 1912.

The descriptive part of the work occupies about 550 pages, and the general distribution of the genera enumerated is set forth in a statistical table. It should be understood that only families and genera are described, and the classification is Englerian. The area embraced includes all the African islands, from the Azores to Tristan da Cunha, and Socotra, the Mascarenes, and Madagascar to Kerguelen. And the geographical divisions of the mainland are physical rather than political. Thonner's enumeration and estimates afford a record of 226 families of flowering plants indigenous in the African region, and represented therein by 3551 genera and 39,800 species, or say 40,000. His estimate for the world is 10,055 genera, with a total of 144,500 species, and his figures are certainly not too high. The table also shows the numbers for North, Central, and South Africa, and the Malagasy Islands.

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Other features of the book are: a condensed bibliography, a glossary, indexes to the popular and botanical names, and a list of the plates and the abbreviations of authors' names. The plates are excellent, and represent members of 150 families, and the letterpress is clear and idiomatic. Wherever possible the author has chosen as distinctive characters such as are visible to the naked eye in a plant in flower. First comes a key to the families, followed by descriptions of the same, and under each a key to its genera, including a considerable number of introduced plants. The plan and scope of the work have been somewhat fully explained, because that seemed a more useful course than a technical criticism. Its full value can only be determined by actual use; but an elementary knowledge of external morphology and descriptive terminology would be necessary and sufficient to enable the student to understand the treatment of the subject. As a book of reference only it answers many interesting questions.

W. BOTTING HEMSLEY.

CHRISTIANITY IN PARTIBUS.

The Nestorian Monument in China. By Prof. P. Y. Saeki. Pp. x+342. (London: Society for Promoting Christian Knowledge, 1916.) Price 10s. 6d. net.

THIS volume deals with one of the most interesting romances of literature ever known. The story has often been told before; but it will bear repetition, on the chance of reaching some whose reading may have lain in other directions.

The Christian religion, under the guise of what is now known as the Nestorian heresy, was carried to China early in the seventh century A.D. by a mission dispatched under the auspices of adherents who had been for some time seeking in the Far East the development which was denied to them in the West. Nestorius had been appointed Patriarch of Constantinople in A.D. 428, but in an evil moment for himself he conceived the idea that all difficulties as to Christ's birth would vanish if it were understood that He had distinct human and divine persons. For this he was deposed in 431, and a few years later he disappeared.

Nestorianism survived its founder for many centuries. Reaching China in the year 631, its advance was so rapid that by 635 Nestorian missionaries were allowed to settle at the capital, where for a couple of centuries they enjoyed Imperial protection and even patronage. In 781 the Nestorian Church of the day set up a huge stone tablet, more than 9 ft. in height, more than 3 ft. in breadth, and about a foot thick. On this tablet an inscription was carved, in Chinese and Syriac, explaining and glorifying the Christian religion, and celebrating the praises of the great and good Emperors who had permitted this teaching to take root and flourish. For flourish it unmistakably did, and so it was found in the thirteenth century by Marco Polo. Then, during the fourteenth century, it faded away, leaving no

trace of any kind that it had ever existed. There is no mention of Nestorianism in the Chinese dynastic histories; no mention of it in any of the contemporary or later Chinese authors whose writings have covered every department of literature. Nor should we now know anything of the early advent of Christianity in China but for an extraordinary accident. In 1625 it came to the notice of Catholic missionaries that the tablet above described, and of which all knowledge had long been lost, had been unearthed somewhere near the old capital, at which we now know from the tablet that Christianity had flourished as above stated. The tablet was denounced as a Jesuit forgery by Voltaire and others, but for a long time there has not been the slightest doubt of its genuineness, and this point is somewhat laboured by Prof. Saeki, who thinks that it "has been preserved by the Divine Providence to reveal to us the true condition of the spiritual side" of China between A.D. 618 and 907.

Prof. Saeki's work is divided into three parts. The first part gives a general history of Nestorianism, especially in relation to the Far East, and the full story of the tablet, not omitting the attempt of Mr. Frits Holm in 1907 to carry it away to America. This enterprising traveller had to be content with a replica, now in the Metropolitan Museum, New York. Prof. Saeki mentions a second replica, "which stands to-day at the top of Mt. Koyd, the Holy Land of Japan," where, we are told, "it was dedicated, with full Buddhist ceremonial, on Sunday, October 3, 1911."

The second part of the book—the translation of the inscription—is the least satisfactory, though it is just there that improvement would be most welcome. A single example must suffice. In the description of the Messiah we read (p. 164): "Hanging up the bright Sun, He swept away the abodes of darkness." This, of course, is unintelligible. The Chinese text means, "He *was* hung up, a bright sun, in order to prevail against the gates of hell"—a light to "lighten our darkness," alluding to the Crucifixion.

The notes on the text which form the third part are interesting and in many cases valuable.

OUR BOOKSHELF.

Preservatives and Other Chemicals in Foods: Their Use and Abuse. By Prof. Otto Folin. Pp. 60. (Cambridge: Mass. Harvard University Press. London: Oxford University Press, 1914.) Price 2s. 6d. net.

PROF. FOLIN'S lecture is a judicious and temperately expressed statement of the arguments for and against the use of preservatives in foods, but it adds little or nothing to our knowledge, and will scarcely tend towards forming a sound public opinion. He who seeks for an *ex cathedra* statement whether the addition of "chemicals" should be permitted to food at all, and if so, what alone should be tolerated, will find nothing in the way of definite pronouncement and not much in the way of light or leading. The author apparently

halts between two opinions. He is constrained to admit that modern conditions of food supply would seem to require the use of such substances. They have been forced upon the community as a commercial necessity, and the consumer is powerless to resist.

The uncertain attitude of the author, however disappointing it may be to his readers, is at least intelligible. The fact is, no one is in a position to dogmatise on the subject, for as regards certain of the chemical products which are capable of retarding or preventing the decomposition of alimentary substances we have no positive knowledge concerning their action on the economy. Nor is it easy to obtain this knowledge. The usual argument that if they retard or prevent the action of the enzymes or bacteria which are concerned in the decomposition or decay of food they will equally inhibit the action of those agencies in effecting its digestion, begs the question and is unsound. Age, idiosyncrasy, condition of health, and a number of other circumstances affect the matter: what is toxic to one person is harmless to another. This is true of food itself, even in the absence of all preservatives. The aphorism of *caveat emptor* affords little comfort to the consumer, but in the present condition of matters it is all that can be offered him; yet it is at least due to him to know whether the food he buys is "preserved," and if so, what preservative and how much of it has been employed. But this is precisely the kind of information that purveyors of food decline to supply except under pressure of legal pains and penalties.

The Bearings of Modern Psychology on Educational Theory and Practice. By Christabel M. Meredith. Pp. 140. (Constable and Co., Ltd., 1916.) Price 1s. 6d. net.

THE author's aim has been "to give a brief account of some portions of recent psychological work which have had and are likely to have a special influence on education." Part i. of the little book is devoted mainly to genetic psychology, part ii. to certain special observational and experimental studies. Within her limits Mrs. Meredith has done distinctly useful work, choosing her topics with discretion and treating them in a competent and serviceable way. Her sketch of the child's mental development is based largely upon the psychological work of McDougall and Shand, whose ideas she has used skilfully in interpreting the outstanding phenomena of the nursery, the playground, and the class-room, with all of which she shows a sound first-hand familiarity. In a well-written chapter on "Experiment in Education" she brings out, by apt illustrations, the complexity of the problems which the laboratory method has to face, showing why its results must always be used with caution and at the same time that they are indispensable to progress. The final chapter on adolescence contains wisdom for parents as well as for teachers. The omission, in so slight a treatise, of a short list of books for further reading is a defect which should be remedied in a second edition.